UNIVERSITY OF MICHIGAN
APR 14 1952
DENTISTRY LIBRARY

THE AMERICAN ACADEMY OF DENTAL MEDICINE
COOPERATION KNOWLEDGE UNDERSTANDING
FOUNDED 1943

Journal of

DENTAL MEDICINE

APRIL, 1952

IN THIS ISSUE

The Present Day Rationale of Fixed Restorations
David H. Coelho 31

A Study of the Cornification of the Oral Mucosa in Normal Males
Samuel Charles Miller, S. Sigmund Stahl and Alexander Soberman 35

Interdependence of Periodontia with Other Fields of Dentistry
Louis R. Burman, Sol Engel, George Goldsmith and Irving Grenadier 40

American Academy of Dental Medicine — Sixth Annual Meeting 46

Book Reviews 55

Medical Views on Oral Problems 56

Abstracts 59

Announcements 62

Vol. 7 • No. 2

OBJECTIVES OF THE AMERICAN ACADEMY OF DENTAL MEDICINE

(*Quoted from the Constitution*)

"To promote the study and dissemination of knowledge of the cause, prevention and control of diseases of the teeth, their supporting structures and adnexa and related subjects; and to foster and promote a better scientific understanding between the fields of dentistry and medicine."

THE JOURNAL OF DENTAL MEDICINE

Published by

The American Academy of Dental Medicine

Volume 7 April 1952 Number 2

Publications Committee

Allan N. Arvins, D.D.S., *Chairman*

Morton S. Biskind, M.D.
J. Lewis Blass, Ph.G., D.D.S.
Louis R. Burman, Ph.G., B.S., A.M., D.D.S.
Julius N. Obin, B.A., D.D.S.
Hayes Martin, M.D.
Samuel Charles Miller, D.D.S.
Harry Roth, B.S., D.D.S.
Sidney Sorrin, D.D.S.

Published quarterly at New York, N. Y.

Editor—Allan N. Arvins, 4 East 41st St., New York 17, N. Y.

Associate Editors

J. Lewis Blass S. Leonard Rosenthal

Assistant Editors

Arthur N. Yohai Melvin A. Snyder George Witkin
Irving Yudkoff Nathan Wachtel

Business Manager—Harold E. Brennan, 527 Fifth Ave., New York, N. Y.

Subscription $3.00 Yearly Single copies, $1.00

Publication in the Journal of Dental Medicine is not an endorsement by the American Academy of Dental Medicine of opinions in any article, abstract or extract. The Editor and Publisher are not responsible for opinions expressed by authors of contributions.

Copyright 1952 by the American Academy of Dental Medicine, Inc.

DIRECTORY OF OFFICERS

President†—Harold R. Gelhaar, 286 Park St., Upper Montclair, N. J.
Secretary—William M. Greenhut, 124 East 84th St., New York, N. Y.
Treasurer—Alvin H. Berman, 2026 E. North Avenue, Baltimore, Md.
Editor—Allan N. Arvins, 4 East 41st Street, New York, N. Y.

BOARD OF TRUSTEES

Gelhaar, Harold R., Chairman

Arvins, Allan N.
Barrett, Jr., Charles E.
Berman, Alvin H.
Blass, J. Lewis
Bruns, George A.
Burman, Louis R.
Clarke, George F.
Copperthwaite, William H.
Goldenberg, Maxwell
Goldstein, Abraham
Greenhut, William M.
Johnston, Wilfred
Laferriere, Albert
London, A. Allan
Kolmer, John A.
Miller, Samuel Charles
Pearson, H. H.
Reiner, Abraham
Rosenthal, S. Leonard
Sorrin, Sidney
Stewart, George
Turkenkopf, Samuel

CHAIRMEN OF COMMITTEES

Fellowship*—Sidney Sorrin, 745 Fifth Ave., New York, N. Y.

Membership*—Abraham Goldstein, 334 East 3rd St., Brooklyn, N. Y.
William H. Copperthwaite, 8 Broad St., Red Bank, N. J.

Dento-Medical Relations*—John A. Kolmer, 2101 Pine Street, Philadelphia, Pa.
George F. Clarke, 10 Post Office Square, Boston, Mass.

Sections—Samuel Charles Miller, 57 West 57th St., New York, N. Y.

Constitution*—Samuel Turkenkopf, 71 Franklin Street, Cedar Grove, N. J.

Publication*—Allan N. Arvins, 4 East 41st Street, New York, N. Y.

Graduate Award—George Stewart, Medical Arts Building, Philadelphia, Pa.

Awards and Endowments*—Maxwell Goldenberg, 1396 St. Catherine St., Montreal, Canada.

Planning—J. Lewis Blass, 4 East 41st Street, New York, N. Y.

Annual Meeting—Wilfred Johnston, 1414 Drummond St., Montreal, Canada.
Albert Laferriere, 3689 Park Ave., Montreal, Canada.
H. H. Pearson, 500 Birks Building, Montreal, Canada.

Historian—William M. Greenhut, 124 East 84th Street, New York, N. Y.

Budget—Alvin H. Berman, 2026 E. North Avenue, Baltimore, Md.

Aid to Dental Students—S. Leonard Rosenthal, 1424 Medical Arts Bldg., Philadelphia 2, Pa.

Research—Charles E. Barrett, Jr., 10 North Main Street, West Hartford, Conn.

† Gordon R. Winter elected in June 1951 died July 29, 1951.
* In accordance with the Constitution.

THE PRESENT DAY RATIONALE OF FIXED RESTORATIONS*

DAVID H. COELHO, A.B., D.D.S., *New York, N. Y.*†

INTRODUCTION

Many changes in thought have come about since the realization that dentistry is not solely a mechanical science. Today, we are well aware of the biological problems involved in constructing a fixed prosthesis. I feel that the term, bio-mechanical science, is a more apt description of the service that we are called upon to render to our patients. However, it is not my intent to push the mechanical procedures into the background. On the contrary, they should assume equal importance with the biological considerations.

The material about to be presented is the sum of the work and study of many men whose conclusions we have tried to evaluate clinically. Since dentistry is a dynamic science, the word "conclusion" is not appropriate. At the present time, this is my understanding of the conditions with which we are confronted. If further study reveals our misunderstanding, I shall readily accept the change.

REDUCTION OF STRESSES

If we are to assume that our operative procedures are fully acceptible from the standpoint of technic, then one of our main considerations is the alveolar bone and its future health. It is well understood by all of us, that the placement of an artificial substitute attached to legitimate members of the dental arch introduces an additional load factor. The results of such stress and strain, improperly applied, will contribute to the disease of the supporting tissues of the teeth upon which the load is placed. Our effort should be one of conservation, to limit the increase in strain as much as possible. This may be accomplished in several ways.

A thorough study of the occlusion and the natural loads, which the abutment teeth will carry, is imperative. The analysis and relief of all traumatic conditions is a must — before instituting any operative procedures. Balancing the occlusion in centric, lateral, and protrusive positions and excursions, is the best insurance for the success of any future prosthesis. This elimination of all unnecessary forces is the first effort in the conservation of the alveolar bone.

Where artificial appliances are to be placed on the teeth, the additional strain may be minimized by the use of multiple abutments. By their action, the load is spread over a greater bone area. Stated in another way, we are adding the supporting bone of one tooth to that of another. Particularly in instances where teeth have been weakened by bone resorption to the degree that their use as individual abutments is questionable, the application of multiple abutments is a saving device.

In the anterior region of the mouth, the principle of levers is always at work when we are concerned with the replacement of four teeth on a fixed prosthesis. The cuspids become the fulcrum and the most anterior pontic is the working point. If we are dealing with a tapered arch, this force deserves considerable note. It may become so great that it would be powerful enough to eventually loosen the cuspids. By including the first bicuspids on either side in the restoration, a resistance force is placed behind the fulcrum point, tending to neutralize the magnified working force. This again is simply the principle of multiple abutments.

USE OF MULTIPLE ABUTMENTS

After periodontic treatment has been completed, many mouths, though free from disease, are still left with poor

* Presented at the Mid-Winter meeting of the American Academy of Dental Medicine. December 2, 1951.

† Associate Professor, Head of Department of Crown and Bridge Prosthesis, New York University, College of Dentistry.

alveolar support for the teeth. Multiple abutments used as aids in the support of these weakened members, are usually termed "splints or stabilizers." It is important to note however, that the amount of success obtained is dependent on the tying of a weakly supported tooth to a strongly supported one. Joining two weak teeth will not offer a long range favorable prognosis.

When constructing splints in different areas of the mouth, different forces must be considered. For example, if two lower central incisors have become weakened by bone loss, the splinting of these centrals with well-supported laterals may seem to follow the principle of weak to strong. However, most lower incisors appear to be on a straight line. The forces directed at such a splint will tend to move it as a unit since there is no antagonistic action. The inclusion of the cuspid teeth, which turn the corner of the arch, will introduce this needed angle of force and prevent the continued forward movement of the stabilized teeth. This same condition sometimes exists in the upper central incisor region where therapeutic splinting will dictate the use of a lateral as a balancing force. Posteriorly, this situation does not exist since the occlusal patterns of the teeth and the vertical thrust of centric closure tend to maintain these teeth in their position in the arch.

It has been pointed out by many clinicians that vertical forces are more easily accepted by the alveolar structure than horizontal stress. It is with this thought in mind that occlusions are equilibrated, and traumatogenic forces removed. Similarly, it is this principle which must be borne in mind when constructing attachments for fixed or removable restorations. Clinically, shallow inclined planes and narrowed buccolingual intercuspal distances on the occlusal aspect of attachments have shown a great measure of success. From a biomechanical standpoint, the use of these anatomical modifications is indicated to us by the analysis of the results of horizontal and vertical forces.

Many tilted and drifting molar teeth can be stabilized by use of fixed attachments. The condensation of bone on the mesial root surface is nature's defense mechanism. The elimination of the movement will permit the healing of the rarefied bone on the distal surface. This, combined with corrected occlusion, will give many serviceable years to a tooth that otherwise would be lost.

A strange clinical symptom has been noted by many of us after the placement of a prosthesis on teeth that have been without antagonists or out of function for a long period of time. Subsequent to the placement of the appliance in the mouth, pain on pressure is noted. A thorough recheck usually does not disclose any unusual occlusal trauma, or other conditions that may be blamed. Orban* describes this symptom as due to a change in the position of the fibers of the periodontal membrane during the period of no function. He goes on to say that, in many instances, time corrects the situation with the deposition of new fibers in proper position to accept the strain. In such cases, nature can be aided by spreading the strain over several abutment teeth with the help of multiple attachments.

Still concerned with the health of the bone structure, the artificial teeth on our prosthesis should be contoured in such a way as to minimize the stress. The intercuspal, buccolingual distance is shortened as the size of the span increases. While this may not result in an ideal articulation, we must remember that we are not treating an ideal situation. Any intelligent action that will result in the preservation of the teeth and their supporting structures, is justified.

There is no question that the use of an increased number of abutments, both in restorative procedures as well as in therapeutic splinting, has resulted in an advance of dental science. Many teeth have been saved which otherwise would have been condemned.

* Orban, Balint. Biologic considerations in restorative dentistry. J.A.D.A. 28:1069-79, July, 1941.

TISSUE DAMAGE DURING OPERATIVE PROCEDURES

The gingival tissue and its maintainance in health is of great concern in any restorative procedure. The healing qualities of the gingiva, as well as its resistance to infection, is well known. While every attempt is made to preserve this tissue from injury during operative technics, many times slight damage cannot be avoided in the interests of a well-made preparation. However, excessive damage, especially to the gingival attachment, is not in accord with good operative procedure. In many instances, this injury to the attachment may result in a healing and reattachment at a lower level on the root surface, leaving a pocket formation. The pocket, in turn, may give rise to future periodontic difficulties. Since recent thought describes the normal gingival crevice as being extremely shallow, it should be our aim to do nothing to increase its depth. Finishing the gingival margins of our castings at the tissue gingival margin, or slightly below, without injury to the attachment seems to be the ideal procedure in order to prevent marginal irritation and inflammation. The knifing of the casting margins to blend with the anatomy of the tooth and the avoidance of overhanging margins, is a principle well understood and accepted by all of us.

However, the observance of these ideas has not completely eliminated marginal inflammation. Incorrect contour of the casting may be partly at fault. In our present use of full cast crowns with acrylic faces, the attempt to gain good color for esthetic satisfaction has caused us to deviate somewhat from the normal and desired contour. Overbuilding the gingivobuccal third with gold, or with acrylic, to obtain shade control, will result in either a stagnant area, or improper food deflection. This may lead to the red, angry-looking marginal gingivae seen around many excellently constructed appliances. The ideal restoration should follow the contour normal for the tooth under treatment, and operative procedures should be such that will permit this normalcy in the finished crown.

CONTACT POINTS

Properly placed and contoured contact points are highly instrumental in preventing food impactions and subsequent gingival irritation. Excessive contact may cause slight movement of a tooth. This may be sufficient to throw it off balance in centric contact, setting up traumatic forces. A lack of contact, on the other hand, will make itself evident in the unhealthy condition of the gingival papilla. Contact areas should be broad where indicated, as in older people where contact wear has taken place. Soldered contact points must never impinge on the gingiva, not alone from the standpoint of chronic irritation, but also from that of cleanliness. Accessibility for the scaler by the dentist, and mechanical stimulation and sanitation by the patient, should be provided. Many of the most frequently used fixed bridges do not satisfy these requirements. Every effort should be made by the profession to perfect an appliance that will make this type of construction unnecessary. During the last few years, great strides have been made in this direction.

ELECTROCAUTERY AS AN OPERATIVE AID

The use of electrocautery in some technics of fixed construction has become very popular. While it is true that the application of the cautery simplifies and aids the impression taking, it raises the question of the effect on the gingival tissue. The elimination of a pocket, and with it a possible source of gingival disease, is the commendable aim of many forms of treatment. Where electrocautery, instituted in the course of this type of fixed construction helps to eradicate unhealthy tissue, it serves a dual purpose. But the question arises — what is the effect of electrocautery when applied to areas of healthy tissue? The answer to this question by many of those applying this technic is that, when "properly used," it is not injurious. "Properly used"

means an incision, not at right angles to the tooth, but at an acute angle so that little tissue is removed. Only enough cautery is used to expose the finishing line of the preparation so that an impression of this area is possible. It is the contention of these clinicians that the healthy tissue will regenerate to the preoperative state. Clinical observation does not permit me to agree completely with the last statement. However, I can say that the health and tone of the tissue, following the careful application of electrocautery is good.

Our concern must not be only for the health of the tissue, but also for the tooth structure which is directly affected by this technic. The exposure of the cervical area of the tooth is, in many instances, a direct result of electrocautery. Always a moot question in our professional thought has been where to end the gingival margins of our castings. From the standpoint of guarding against decay, finishing just below the tissue margin is the greatest protection we can afford. It is true that in some conditions, such as advanced gingival recession, it is neither prudent nor possible to obtain such complete protection. Again, the normal physiologic recession of the tissue with age will expose tooth structure uncovered in the original construction. When we regard these problems along with the aforementioned irritation of the gingiva noticed in many cases where castings are in place, how can one make the final decision as to right or wrong? Constant clinical observation of many cases will be necessary to determine if the electrocautery technic will give overall favorable results. After seeing the high incidence of cervical caries, particularly in the posterior area of the mouth, it is my feeling that protection against decay is an urgent consideration. Control of gingival recession, or at least a slowing of that process, is feasible by balancing and equilibrating the natural dentition and our prosthetic replacements. Proper contouring of these fixed replacements will help to minimize the marginal irritation. Therefore, it must be the mature judgment of the operator that will decide what will be the best method of treatment, dependent upon the conditions presenting themselves with each individual patient.

PULP PROTECTION

Only one additional consideration remains for brief discussion. The injury that may be inflicted upon the pulp of a tooth during operative procedures is common knowledge. The physiology and pathology attendant to these structures should guide us in instituting these procedures. Careful protection of the prepared surfaces is essential if the optimum health of the pulp tissue is to be maintained.

CONCLUSION

It is evident then, that the mechanics of artificial appliances have become closely allied with the biologic problems. Much has been learned to prolong the life of natural teeth by the intelligent application of restorative procedures. A great deal still remains to be uncovered. The answer to many of our present problems lies in the operative failures we see today. Just as great strides have been made in our technical abilities, so will great advances yet be made in the best physiological application of those abilities.

510 Madison Avenue

A STUDY OF THE CORNIFICATION OF THE ORAL MUCOSA IN NORMAL MALES*

SAMUEL CHARLES MILLER, D.D.S., F.A.C.D.*
S. SIGMUND STAHL, D.D.S., M.S.†
ALEXANDER SOBERMAN, D.D.S.‡

This study was undertaken for the purpose of comparing the exfoliative cytology of the oral mucosa in normal males of various ages. The technique of obtaining and processing the scrapings followed that outlined by Papanicolaou, Traut and Marchetti.[1] The sites of the oral mucosa selected for this study were the same as those reported by Miller, Soberman and Stahl[2] for young males in 1950.

Drs. A. Geronemus, R. W. Slatten, A. Stone and M. Tuckman, postgraduate students in the Department of Periodontia, New York University College of Dentistry, cooperated with the authors in this study.§

Interest in the study of exfoliating epithelial cells as related to ovarian function, dates back to the beginning of the century. In 1915, Schroeder[3] attempted to correlate ovarian function with cyclic changes in the endometrium. Stockard and Papanicolaou[4] studied the estrous cycle of the guinea pig and as an outgrowth of this and other studies, Papanicolaou[5] in 1933 described the cyclic changes in women as they are reflected in the cellular make-up of the vaginal fluid.

The study of exfoliating cells of the oral mucosa was first undertaken by Weinmann[6] who, using the Wright and Gram stains, reported different degrees of cornification in various sites of the oral mucosa. Ziskin and Moulton,[7] using the Shorr stain, compared oral and vaginal smears and observed that cyclic changes similar to those observed in the vaginal fluid could be seen in scrapings of the cheek. Iusem,[8] using the Papanicolaou technique, noted cyclic changes in the exfoliating epithelium of the cheek in females followed over a period of three months. Papic and Glickman,[9] using the Shorr stain, studied gingival keratinization of women during the menstrual cycle and noted no correlation between the gingival keratinization and the various stages of the menstrual cycle. Montgomery,[10] as well as Miller, Soberman and Stahl,[11] using oral scrapings of healthy males, found that a definite cytologic pattern existed in various regions of the oral cavity.

MATERIAL AND METHODS

In order to evaluate the exfoliative cytology of the oral mucosa, as well as study the possible effect of aging and environment on oral epithelium, 300 males, ranging in age from 8 to 80 years, were chosen at random for this investigation.

This group consisted of the following components:

Group A—50 young males, ranging in age from 8 to 17 yrs., who were residents of the Pride of Judea Orphans Home in Brooklyn, N. Y.

Group B—50 young males, ranging in age from 8 to 17 yrs., who were seen at the Children's Dentistry Clinic, New York University College of Dentistry, and at various clinics of the New York City Department of Health.

* Professor and Head of Periodontia Department, New York University College of Dentistry.
† Instructor, Periodontia Department, New York University College of Dentistry.
‡ Assistant, Periodontia Department, New York University College of Dentistry.

The authors would like to express their appreciation to the staff of the Pride of Judea Orphans Home of Brooklyn, N. Y., The Department of Childrens Dentistry, New York University College of Dentistry; Dental Division of the New York City Department of Health; and the Brooklyn Hebrew Home for the Aged, Brooklyn, N. Y. for their cooperation in this study.

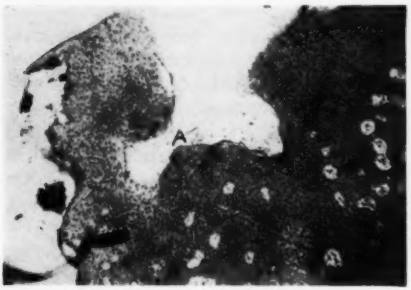
§ The Papanicolaou Stain used in this study was supplied by the Ortho Pharmaceutical Co., Raritan, New Jersey.

Group C—50 young males, ranging in age from 20 to 30 yrs., who were students at New York University College of Dentistry.

Group D—50 young males, ranging in age from 20 to 30 yrs., who were patients at New York University College of Dentistry.

Group E—50 aged males, ranging in age from 60 to 80 yrs., who were residents at the Brooklyn Hebrew Home and Hospital for the Aged.

Group F—50 aged males, ranging in age from 60 to 80 yrs., who were patients at New York University College of Dentistry.



Gingival biopsy specimen showing desquamation of superficial epithelial cells. (A) Hematoxylin and Eosin stains. Magn. 100X.

In all cases, the following four sites were selected for scrapings:

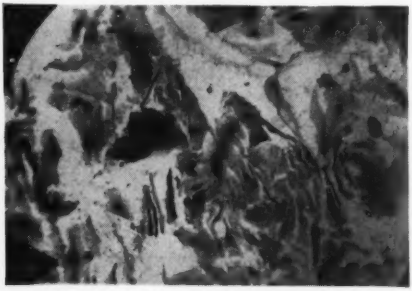
1) the midline of the anterior third of the dorsal aspect of the tongue,
2) the midline of the anterior third of the ventral aspect of the tongue,
3) the area of the right cheek just anterior to the opening of Stenson's duct,
4) the labial margin of the lower anterior gingiva.

In 50 patients, ranging in age from 8 to 18 yrs., as well as in 50 patients, ranging in age from 20 to 30 yrs., scraping were also taken from the midline of the hard palate.

Scrapings were taken from the selected sites by means of a wooden spatula. These scrapings were immediately transferred onto a glass slide which was at once immersed in equal parts of ether and 95% ethyl alcohol for fixation. The slides were then stained and interpreted according to the technique outlined by Papanicolaou.

Before the scrapings were taken, each area had to appear normal clinically. The medical history was taken in all cases, and only those patients who had a normal history were included in the study.

A random count of 100 cells was made on each slide and the cells found were classified into the following three groups: 1) blue staining cells with nuclei, 2) red staining cells with nuclei and 3) yellow staining cells with pyknotic nuclei or anuclear.*



Higher magnification of desquamating cells. Hematoxylin and Eosin stain. Magn. 450X. These cells appear similar to cells scraped from the surface epithelium.

OBSERVATIONS

Three cell types were observed in the scrapings of the oral mucosa. These were: (a) blue staining cell with regular outline and a light staining, round nucleus, (b) red staining cell with irregular outline and dark staining, pyknotic nucleus, and (c) yellow staining cell often having an indefinite outline and in many cases showing a complete disintegration of the nucleus. Variations in color were seen, but for the purpose of clarity only distinct cells were noted.

A constant pattern of cornification was observed in the oral mucosa which remained constant throughout aging. The highest degree of cornification, as seen by the greatest abundance of yellow staining cells with pyknotic nuclei or anuclear, was seen in the gingivae and hard palate. The next highest degree of cornification

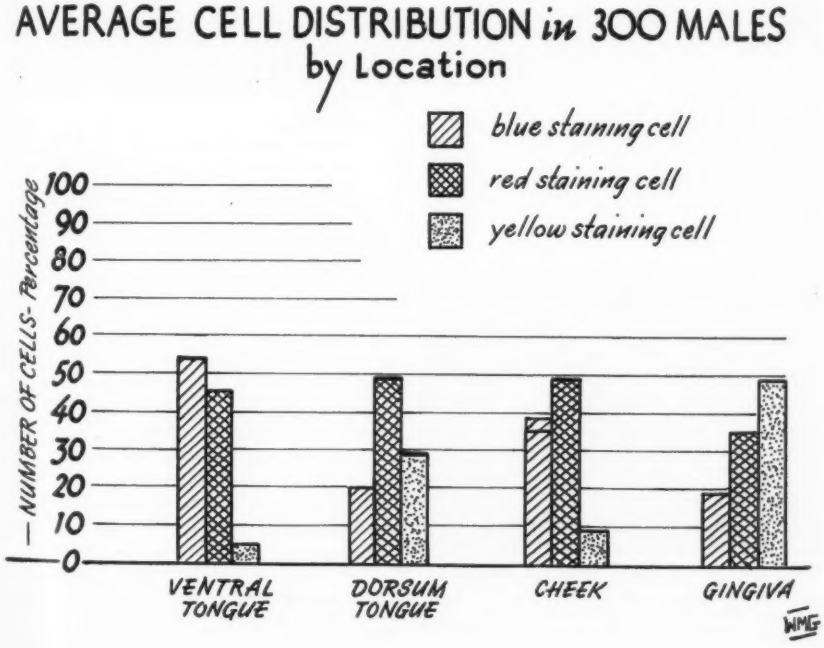
was seen on the dorsal surface of the tongue, followed by the cheek and ventral surface of the tongue (see graph). The degree of cornification was determined for each scraping by the relative proportion of yellow, red and blue staining cells present on the slide. This cornification pattern agreed with previous histologic and cytologic findings.[10,11,12]

General environment, (i.e. supervised medical and nutritional care vs. patients chosen at random) as well as progressive aging did not seem to influence the cornification pattern. In one group of aged males a lesser degree of cornification of the gingiva than usual was noted. This change may have been brought about by inadequate gingival massage.

The proportion of cell types in each location varied greatly in normal individuals, it is therefore suggested that only extreme variations from the normal pattern be considered abnormal.

COMMENT

The findings in this study confirm histologic evidence that a pattern of cornification exists in the oral mucosa. Stein[13] in his study of the histologic changes that occur in the tongue in patients suffering from malnutrition notes "It seems that changes in the lamina propria and the connective tissue of the submucosa and changes in the epithelial layer ramification and flattening of the rete pegs and reduction of the prickle cell layer frequently antecede changes in keratinization." These observations would seem to indicate that changes in the cornification pattern of the oral mucosa would follow only after severe metabolic upsets or specific diseases causing mucosal aberrations. Thus, the apparent constancy of the cornification of the oral mucosa in normal individuals as well as the ease with which the scraping can be obtained, make this technique helpful in studies of pathologic conditions which manifests themselves by changes in the epithelial nucleus and/or extreme lack or abundance of cornification.



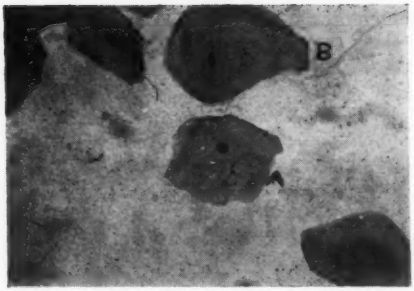
SUMMARY AND CONCLUSIONS

Epithelial scrapings of 300 normal males ranging in age from 8 to 80 yrs., were taken from various areas of the oral mucosa. These areas included:

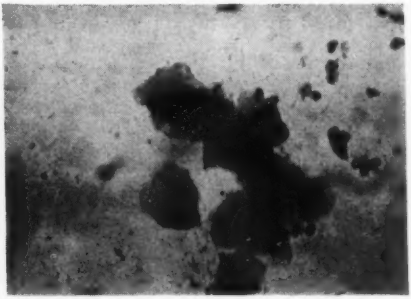
1) the midline of the anterior third of the dorsal aspect of the tongue,
2) the midline of the anterior third of the ventral aspect of the tongue,
3) the area of the right cheek just anterior to the opening of Stenson's duct,
4) the labial margin of the lower anterior gingiva.
5) in 100 patients ranging in age from 8 to 30 yrs., scrapings from the midline of the hard palate were also taken.

All scrapings were processed and interpreted according to the technique outlines by Papanicolaou.

The areas of the oral mucosa examined, showed various degrees of cornification. The highest degree of cornification, as seen by the greatest abundance of yellow staining cells with pyknotic nuclei or anuclear, was seen in the gingivae and hard palate. The next highest degree of cornification was seen in the dorsal surface of the tongue, followed by the cheek and ventral surface of the tongue. The constancy of this pattern was not affected by aging.

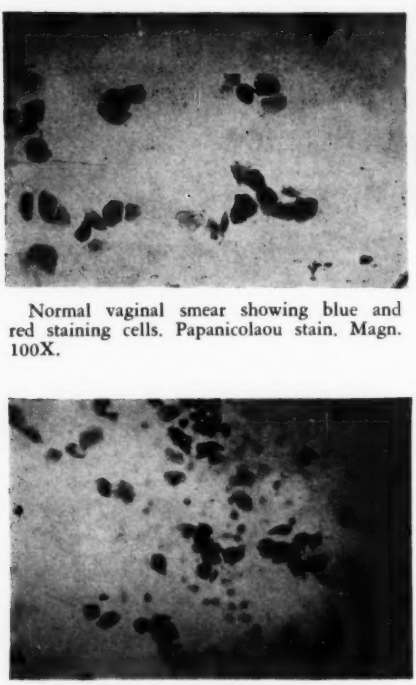


High magnification of blue (A) and red (B) staining cells. Papanicolaou stain. Magn. 450X. Note pyknotic nucleus and granular cytoplasm in red staining cell.



High magnification of yellow staining cells. Papanicolaou stain. Magn. 450X. Note loss of nuclear structure.

Normal vaginal smear showing blue and red staining cells. Papanicolaou stain. Magn. 100X.



Normal oral (cheek) smear showing blue and red staining cells. Papanicolaou stain. Magn. 100X. Note similarity of cellular appearance between vaginal and cheek smears.

The authors wish to acknowledge Dr. William M. Greenhut's help in preparation of the illustrations.

BIBLIOGRAPHY

1. Papanicolaou, G. N., Traut, H. F., and Marchetti, A. A.: The Epithelia of Women's Reproductive Organs. New York, 1948. Commonwealth Fund.

2. Miller, S. C., Soberman, A., and Stahl, S. S.: A study of the cornification of the oral mucosa of young male adults. J. Dent. Res. 30:4, 1951.

3. Schroeder, R.: Anatomische studien zur normalen und pathologischen physiology des menstruations zyklus. Arch. f. Gynekolie. 104:27, 1915.

4. Stockard, C. R., and Papanicolaou, G. N.: The existence of a typical oestrus cycle in the guinea pig, with a study of histologic and physiologic changes. Am. J. Anat. 22:225, 1917.

5. Papanicolaou, G. N.: The sexual cycle in the human female as revealed by the vaginal smears. Am. J. Anat. 52:519, 1933.

6. Weinmann, J. P.: The keratinization of the human oral mucosa. J. Dent. Res. 19:57, 1940.

7. Ziskind, D. E. and Moulton, R.: A comparison of oral and vaginal epithelial smears. J. Clin. Endocrinology. 8:146, 1948.

8. Iuseum, R. A cytologic study of the cornification of the oral mucosa in women. Oral. Surg., Oral Med., and Oral Path. 3:1516, 1950.

9. Papic, M., and Glickman, I.: Keratinization of the human gingiva in the menstrual cycle and menopause. Oral Surg., Oral Med., and Oral Path. 3:504, 1950.

10. Montgomery, P. W.: A study of exfoliative cytology of normal human mucosa. J. Dent. Res. 30:12, 1951.

11. Miller, S. C., Soberman, A., and Stahl, S. S.: Ibid.

12. Orban, B.: Oral Histology and Embryology. St. Louis, The C. V. Mosby Co., 1944. p. 261.

13. Stein, G.: Private communication.

Electron Miscroscopy*

By C. E. HALL

In the ten years since the electron microscope first became generally available in this country, instruments have been improved and simplified and techniques for the preparation of materials have been developed to the point where it is now a proven instrument for research on the structure of materials in almost every branch of science. Although it was evident at the beginning of this period that the new instrument was capable of providing useful magnifications up to two hundred times that of the best light microscopes, serious difficulties were encountered at first in the examination of biological materials, because the conditions for observing specimens with electron beams are quite different from those in light microscopy. Before the full potentialities of the electron microscope could be realized in practice, new methods of preparing materials for examination had to be developed and discovered. Some of the special techniques by which most of the major difficulties have now been overcome were described. Photographs were shown of virus particles, bacteria, muscle and other tissues, demonstrating the accomplishments of electron microscopy in the fields of biology and medicine. It is even possible to photograph some of the larger molecules of proteins which are the chief constituents of living substances. Electron micrographs were shown of protein crystals wherein the molecules are arranged in regular patterns which can be measured to obtain accurate values for the size and shape of individual molecules.

* Presented at the Annual Meeting of the American Academy of Dental Medicine, Boston, June 24, 1950.

INTERDEPENDENCE OF PERIODONTIA WITH OTHER FIELDS OF DENTISTRY*

LOUIS R. BURMAN, B.S., A.M., D.D.S., F.A.D.M.[1]
SOL ENGEL, B.S., D.D.S.[2]
GEORGE GOLDSMITH, D.D.S.[3]
IRVING GRENADIER, B.S., D.D.S.[4]

The practice of modern dentistry requires skill and knowledge covering a wide variety of procedures. So great has been the advance in the various fields of this profession that individuals have confined themselves to particular phases of its practice. This does not imply that only specialists can treat patients. It means that because these persons have limited their practice to one phase of dental treatment, it is possible for them to give a patient more concentrated effort in a particular respect and thus perhaps achieve a better result.

Whatever the specialty may be, it is only one part of treatment to restore a patient's oral health. Complete oral rehabilitation frequently requires the services of more than one individual and this calls for teamwork in the field of dental practice. The general practitioner, periodontist, prosthodontist, orthodontist and surgeon are all integral parts of this team and each may perform particular services for a patient.

It is the purpose of this paper to indicate some of the ways in which the dental team may work in harmony for the benefit of the patient. It is not possible to discuss all types of cases and only few will be presented as examples, with an attempt to state the fundamental principles involved.

Statistics show that the span of life is increasing and that we are becoming a nation of older individuals. More and more we come to realize that persons living longer can and should retain their teeth for their span of life. The necessity for losing teeth is gone. Proper and timely care can save carious teeth, however, more teeth are lost during the life span due to periodontal involvements. We know that periodontal disease can be cured, if the practitioner is alert enough to spot this condition before it becomes too advanced.

There is no magic associated with dental cures; they require diligent application of sound principles with no short cuts. They require proper examination and a realization that dental work cannot be done for any patient unless a good and true diagnosis has been made, a diagnosis that will stand up before, during and after treatment, a diagnosis that does not have to be altered somewhere along the line, a diagnosis that is beneficial only to the patient.

In making a diagnosis for a patient the following are some of the factors to bear in mind.

1. Examine the soft structures of the mouth. Note the appearance of the gingivae, the mucous membrane, the tongue, the palate, etc. Ascertain if they are all normal.

2. Examine the teeth, chart the caries, use rigid instruments to check the mobility of teeth.

3. Make study casts to look for arch form, tooth form, occlusal imbalance.

4. Take a complete case history, inquire about the general health of the patient, present or past ailments, neuroses, etc.

* Presented before Bronx County Dental Society, Nov. 19, 1951.

1. Assistant Professor of Periodontia, Assistant Professor of Anatomy, New York University College of Dentistry.
Periodontist—Morrisania City Hospital.
2. Instructor of Crown and Bridge, New York University College of Dentistry.
3. Chief of Periodontia—Lebanon Hospital.
4. Director of Orthodontics, Bronx Division of Community Service Society of New York.

5. A full series of roentgenograms is of vital importance, to note the type, amount and distribution of the bone present, to note infections, foreign bodies, impactions, and other destructive processes that might be present in the bone. It is by the use of roentgenograms that incipient periodontal disease can be discovered long before any clinical signs are apparent. Horizontal destruction of the interproximal bone is an early sign, when vertical destruction is present, usually the disease is well advanced.

6. A knowledge of laboratory tests may frequently help in making a diagnosis when systemic factors are complicating the picture.

All of these findings should be recorded on a suitable chart for later evaluation.

In an attempt to complete the diagnosis, the following factors should be considered in making an overall plan for the patient according to Miller:

1. Extension of pockets; when pockets extend to bifurcations or trifurcations or to the apices of the teeth, the prognosis should be considered hopeless. It is not always possible to check for pockets with the usual roentgenograms. Insertion of a gutta percha point with a subsequent roentgenogram will give a better indication of the pocket depth (Fig. 1.).

Fig. 1

Use of gutta percha point to determine depth of buccal or palatal pocket.

Teeth with bifurcation or trifurcation involvements should not be used as abutments nor should any attempt be made to move them to other positions.

2. Alveolar bone support includes the amount, distribution and nature of the remaining bone.

Usually at least half the bone should be present around the tooth to give it a favorable prognosis. Uneven bone support is an advantage (Fig. 2a) since it raises the center of rotation of the tooth and reduces leverage. Leverage is important in the masticatory act since minute pressures can cause massive tooth movements, more so when the bone support is poor (Fig. 2b). Finally one must decide whether the bone is of large or small cancellous type. The bone with smaller cancellae gives a better prognosis as it is a denser type of bone (Fig. 3).

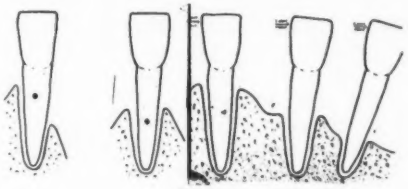


Fig. 2

a. Diagrammatic representation of the center of rotation of a tooth which is higher with uneven bone support.

b. Diagrammatic representation of tooth movement with a given force but with varying amounts of bone support.

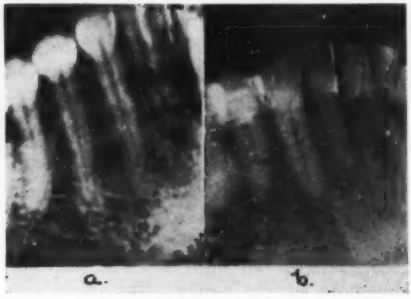


Fig. 3

a. Bone with large cancellae.
b. Bone with small cancellae.

3. Mobility of the teeth should be considered. Teeth that can be moved half a millimeter in each direction from their center, or that can be rotated or depressed have a hopeless prognosis, unless the mobility is due to an excessive pressure that can be remedied easily, and effective splinting can be instituted.

4. Number of teeth remaining; loss of contact or loss of teeth places additional strain on those teeth remaining. The dental apparatus is devised so that 28 or 32 teeth take up the load. When fewer teeth are present these must take up the entire load not only for themselves but for any replacements made. Therefore the fewer teeth present the poorer is their prognosis. In addition we must consider the strategic location of the remaining teeth in planning fixed or removable appliances.

5. Age of the patient; it may be stated that in general, older patients with periodontal disease have a better prognosis for their teeth than younger patients with the same amount of destruction. This is based on the premise that in older patients the bone has fully formed and has had the ability to resist the disease over a long period of time, while in younger patients that bone may never have fully formed nor built up any resistance to cope with the disease.

6. State of health of the patient; the dentist should not hesitate to consult with the physician regarding the patient's general health. If the patient's physical or mental condition will not stand long procedures then the simplest methods are advised.

7. Possibility of removing the etiological factors; whenever the causative factors cannot be removed, the prognosis is poor. Severe malocclusion which cannot be corrected by grinding or orthodontic methods, chronic systemic diseases such as diabetes, neuroses and the like are to be considered in this category.

8. Finally we must consider the cooperation of the patient. This is of the greatest importance, since no case can be completed successfully without this help. Before accepting a case the patient should be advised of the part he is to play in the correction of his oral condition. Home care and routine check-up are to be stressed. Other conditions that the patient can correct are diet, exercise, habits, etc. If the patient does not cooperate, we must fail in our treatments.

Many factors have been listed here for consideration but if they are observed a proper conclusion will result. Of course there are differences of opinion amongst all of us, but these differences will be reduced to a minimum if the above mentioned principles are maintained. Thus, if a proper diagnosis is made, every field of dentistry is covered and decisions can be made as to the advisability of orthodontic correction, splinting, types of restorations, fixed or removable appliances, etc.

In the treatment of periodontal disease it is important to eliminate all etiological factors and perform all procedures necessary for the re-establishment and maintenance of oral health. Many periodontal conditions respond very well to routine procedures, such as the removal of all gross and subgingival calculus, removal of premature contacts in centric, balancing of the occlusion and institution of home care.

Periodontal surgery is resorted to when pockets still remain after a reasonable time has been spent on conservative treatment (Fig. 4).

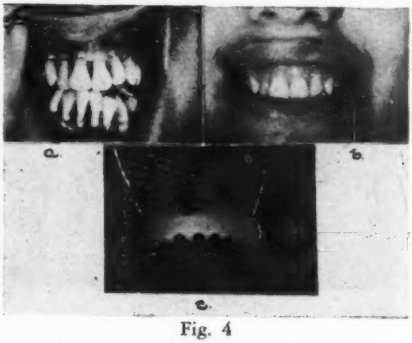


Fig. 4

a. Tissue removed surgically to eliminate pockets.
b. Cosmetic effect achieved by use of an acrylic facing.
c. Acrylic facing.

In the treatment of periodontal disease with rapid bone destruction, employment of the above procedures alone does not always bring about a satisfactory result. Teeth continue to drift, pockets remain open, mobility may not be reduced and the prognosis in these cases frequently is poor to negative.

Fortunately the allied arts in the dental profession can be used to good advantage in helping retain involved teeth. The orthodontist, prosthodontist, and general practitioner can all contribute their share in oral rehabilitation. For example, migrating and malaligned teeth can be repositioned harmoniously by the orthodontist. The case can then be completed by the general practitioner who is part of the dental team and will construct appliances to help maintain the position of these teeth and to prevent their return to mal-position (Fig. 5).

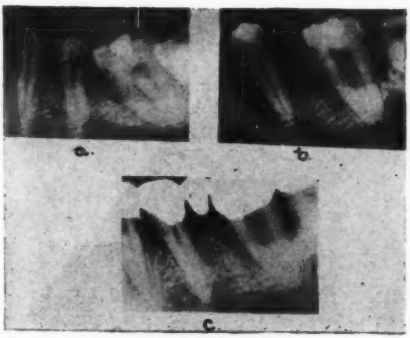


Fig. 5

a. Drifting of molar and rotation of bicuspid due to premature loss of lower first molar without replacement.

b. Space created orthodontically.

c. Bridge replacement using four three-quarter crowns and a pontic. Mesial molar pocket eliminated surgically after splint was in place.

Immobilization of teeth can be accomplished by means of removable (temporary) (Fig. 6) or fixed (permanent) splints (Fig. 5). It is essential that weak teeth be supported by strong neighbors. Temporary splints include the Hawley retainer, the rigid removable splint such as the continuous stainless steel crib clasp running both labially and lingually (Miller), the acrylic splint (Sorrin), and wiring. Permanent splints employ the use of crowns, veneer crowns or ¾ crowns connected together. Periodic

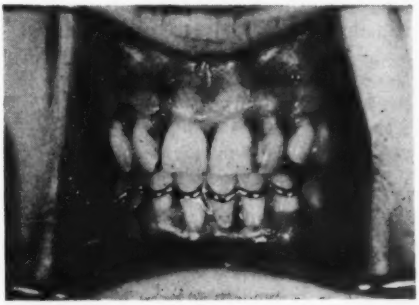


Fig. 6

Use of metal continuous crib clasp splint (temporary) to stabilize loose lower anterior teeth.

check-up after the completion of the above mentioned services is of utmost importance, and this fact must be strongly impressed upon the patient before, during and after treatment.

The successful retention of the dentition and of the restorative apparatus is dependent in a large measure upon the attitude and diligence of the patient in tooth brushing and home care. Unless the necks of the teeth and exposed root surfaces are kept free of debris, food plaques and calculus, caries or sensitivity may result. The patient is recalled frequently for the first 2 years. Where needed, abutment teeth, although covered with ¾ or full cast crowns, should have root surface cleansing. Careful probing beneath the new free gingival margin will frequently disclose some calcareous material which must be removed. Pockets are curetted and exposed surfaces are cleaned, polished and desensitized if necessary. All gingival margins must be hardened and since toothbrush bristles will not reach all interproximal areas

instructions in the use of the rubber interdental stimulator may be given. This may be further augmented by the use of round small tooth picks or other types of stimulators. These are inserted into small interproximal spaces, pressed gently against the gingivae and rotated four or five times. In this manner the interproximal root surfaces are cleaned and the tissue receives compression massage. This method is to be used only in those spaces which are not accessable to the tooth brush. An undesirable wedging action may result if the stimulators are not employed properly.

Often after surgery, small bits of granulation tissue which have not organized properly remain about the necks of the teeth. These bleed easily and interfere with healing. These masses should be removed or reduced by silver nitrate crystals, electrocoagulation or by other surgical means.

Where restorative work has been done after periodontal treatment has been completed and even after orthodontic treatment has been completed the periodontist should study, re-check and correct, if necessary the occlusal balance. There is continuous eruption of teeth during life and the importance of maintaining occlusal harmony and balance is self-evident.

Thus in those cases which require the services of the periodontist, the orthodontist and the operative procedures of the general practitioner, fine oral health and long retention of periodontally involved teeth can be obtained provided the diagnosis has been correct and the treatment plan completed.

Periodontics and orthodontics are to a great extent preventive sciences. The records show that at least 65% of all teeth removed after the age of 35 are lost, not because of caries, but because of periodontal conditions which have been brought about, all too often, by trauma and malocclusion. Most forms of periodontosis with or without visible clinical signs of an inflammatory disturbance, may have malocclusion as one of the basic etiological factors. Where the migration or displacement of individual teeth has not yet taken place, and it has been definitely determined that traumatic occlusion is one cause of the periodontal disturbances, it is obvious that the conventional form of treatment such as scaling, curettage, medication and grinding the inclined planes for occlusal equilibration may be all that is required and very often, where a mild degree of mobility exists, we may resort to temporary splinting with either steel or silk ligatures.

It is of interest to discuss some of the more severe malocclusions in which the periodontist or the general practitioner may call upon the orthodontist for cooperation. First, a discussion of a simple problem, one which is elementary and has to do with occlusal disharmony in the very young child. Faulty eruption of an upper incisor may cause the beginning of localized periodontal involvement. Inflammatory lesions may be evident clinically with marked gingival recession, alveolar resorption, and second degree

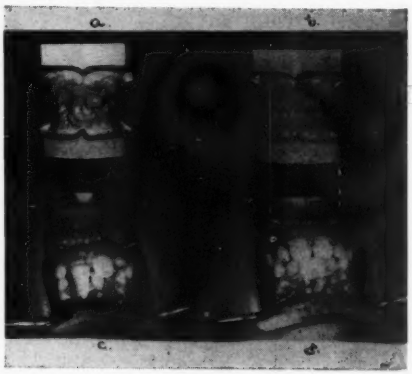


Fig. 7

a. Front view of casts before treatment. Both maxillary lateral incisors in lingual version, in addition to right central incisor.

b. Same view of casts seven months later.

c. Intra-oral view of teeth in occlusion before treatment. Note gingival recession due to trauma.

d. Same view after treatment. Only maxillary appliance used. Note that muscular action of tongue aligned mandibular incisors after elimination of mechanical interference.

mobility of the lower antagonist. In many of these cases the upper permanent lateral incisors erupt behind the deciduous laterals. Disturbances in these mouths are usually confined to the anterior parts of the oral cavity (Fig. 7a, c.). Orthodontic correction in these cases is usually confined only to the maxillary arch. When the interference is removed, the normal muscular pressure of the tongue starts the mandibular teeth on their way to harmonious alignment in the dental arch. Most of the signs of localized periodontitis will disappear with the elimination of the original cause. Periodontal treatment as we know is not required in these cases because this type of injury to the supporting tissues heals readily when the abnormal stress is relieved, particularly in the very young (Fig. 7b, d.).

Consideration of some of the more difficult problems are now in order. These cases may require close cooperation between the periodontist, prosthodontist and the general practitioner.

In the type of case known in the old terminology as migratory pyorrhea (Fig. 8a) the normal reparative power of the tissues is overtaxed by repeated abuse and trauma over a long period of time. The pathologic changes resulting from abnormal or excessive functional stress are present in the bone, periodontal membranes and on the root surfaces. Before, during, and after orthodontic correction periodontal treatment is necessary in these cases and usually some form of fixed splinting for purposes of stabilization and wider distribution of the masticatory stresses. It is only after such a case is splinted that the teeth can be expected to carry their normal functional load. In these cases the migration and elongation of the maxillary incisors is quite obvious, and as in all such cases of bone destruction there are varying degrees of mobility on all the anterior teeth. The single rooted teeth are generally involved at the beginning, the multi-rooted teeth offering more resistance to the repeated occlusal impacts. When untreated, these cases get progressively worse, and continue getting worse until the teeth can no longer be brought into apposition. Percussion of these migrating teeth gives a dull response, because connective tissue has replaced much of the alveolar bone. Fixed orthodontic appliances are employed for varying periods of time and when the individual tooth movements have been completed, a Hawley bite plate is inserted. These teeth will often tighten considerably, but usually the six upper

Fig. 8

a. Front view of casts indicating migration of maxillary anteriors.

b. Same view after orthodontic treatment. Note increase in vertical height. This case will require splinting to assure permanency of correction.

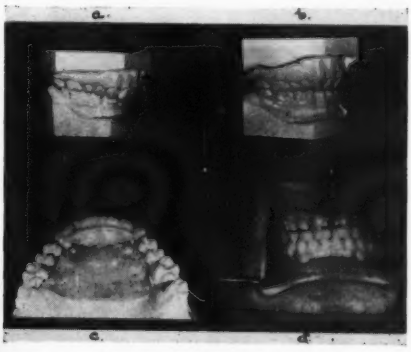


Fig. 9

a. View of right side of casts. Severe Class II Division II malocclusion with deep vertical overbite.

b. Same view of casts after treatment. Note increase in vertical dimension.

c. Occlusal view of Sved bite plate, used to maintain corrections of rotated lateral incisors while vertical height is being restored.

d. Intra-oral view after treatment with Hawley bite plate in position during retention period.

AMERICAN ACADEMY OF DENTAL MEDICINE

Sixth Annual Meeting

MOUNT ROYAL HOTEL, MONTREAL, P. Q., CANADA

May 29, 30, 31, 1952

Program

THURSDAY, MAY 29, 1952

9 a.m. to 12 noon; 2 p.m. to 5 p.m.

PRE-CONVENTION SEMINAR — REGISTERED CLINICS

These clinics will be given by each group once in the morning and repeated in the afternoon so that registrants will be able to partake of both clinics.

1. Newer Concepts in Periodontia.
   SAMUEL CHARLES MILLER, D.D.S., F.A.C.D., F.A.D.M.
   SIDNEY SORRIN, D.D.S., F.A.C.D., F.A.D.M.
   J. LEWIS BLASS, D.D.S., F.A.C.D., F.A.D.M.
2. Psychosomatics in Dentistry.
   JOSEPH S. LANDA, D.D.S., F.A.C.D.
   SAMUEL LESLIE, M.D., D.D.S.
   JACK STOLZENBERG, D.D.S.

Up to 6 p.m.: OFFICIAL REGISTRATION TIME FOR MEETING.

7:30 p.m.: DINNER PARTY—ENTERTAINMENT.

FRIDAY, MAY 30, 1952

10 a.m. to 1 p.m.: BUSINESS MEETING.

1 p.m.: LUNCHEON.

2:30 p.m.: SCIENTIFIC SESSION—ESSAYS

1. The use of Radioactive Isotopes in Dentistry.
   J. P. LUSSIER, D.D.S., *Montreal.*
2. Significance of Stress in the Practice of Preventive and Restorative Dentistry.
   CHARLES MOSES, D.D.S., M. SC., *University of Toronto.*

6:30 p.m.: COCKTAIL PARTY.

7:30 p.m.: DINNER—AWARDS TO HONORARY MEMBERS.

ERNEST CHARRON, D.D.S., F.A.C.D., F.I.C.D., F.D.S.R.C.S. (Eng.)
Dean, University of Montreal Dental College.

D. PRESCOTT MOWRY, D.D.S., F.A.C.D., F.D.S.R.C.S. (Eng.)
Dean, Faculty of Dentistry, McGill University.

SATURDAY, MAY 31, 1952

10 a.m. to 1 p.m.: SCIENTIFIC SESSION—CLINICS.

1. Precision and Semi-Precision attachments and their Significance in Complete Mouth Rehabilitation.
   JOSEPH S. LANDA, *New York*
   STUART LANDA, *New York*
2. Bone Implants.
   ARMAND GENEST, *Montreal*
3. Maxillo-Facial Surgery.
   JOHN W. GERRIE, *Montreal*
4. Restoration of Pulpless Tooth.
   H. M. ROBICHAUD, *Montreal*
5. Symposium on Endodontics.
   Montreal Endodontia Society
   SIDNEY MACSWEEN
   VINCENT TREMBLAY
   GEORGE ZIMMERMAN
6. Oral Carcinoma.
   O. DUFRESENE, *Montreal*
7. Surgical Procedures in Oral Pathology.
   ROBERT M. WEINER, *Montreal*
8. Diagnosis and Oral Pathology.
   A. G. RACEY, *Montreal*
9. Encephalographic Radiology.
   HOWARD OLIVER, *Montreal*

1 p.m.: LUNCHEON—ACADEMY AWARDS

2:30 p.m.: SIGHTSEEING

6 p.m.: OFFICIAL HOTEL CHECKING OUT TIME

Registration Fee:

Members	$25.
Non members	30.
Ladies	20.

*Registration Fee for Registered Clinics:

Members	$10.
Non members	15.

*This fee is for both clinics.

Further information, reservation cards, train schedules, tours, etc., will be received in the mails by all members.

PLAN YOUR TRIP NOW
RETURN YOUR RESERVATION CARD
AS SOON AS YOU RECEIVE IT
Montreal Hospitality Awaits You

"WIL" JOHNSTON
"AL" LAFERRIERE
"HY" PEARSON
Chairmen

anteriors will have to be permanently splinted if they are to be preserved for a long period of time (Fig. 8b).

We are frequently confronted with deep bite cases and the following factors should be borne in mind. When the maxillary anteriors overlap the mandibular incisors by more than one third without a compensating horizontal overjet, we are dealing with a deep bite. A deep bite must not be confused with a closed bite, the latter being due generally to mutilations in the dental apparatus such as results from the loss of lower molars. There are various degrees and types of deep bites, some with a good orthodontic prognosis, and others with a poor prognosis. The necessity for increasing the vertical dimension (opening the bite) must always be carefuly considered. The roentgenograms, casts of the mouth and the type of musculature must be studied because unless the bony support is good, and the shape and length of the roots are sufficiently supportive, the prognosis may be poor. A good rule to follow is to see that the degree of opening should not be beyond that which the muscles, supporting bone and root length will allow.

In this paper two distinctly different types of deep overbite cases are presented. Both of these, if left unattended will eventually result in a breakdown of the periodontal tissues. The first is that of a teen-age individual. In those cases where there is a severe overbite without a compensating overjet, there is a definite cuspal interference in all of the excentric movements of the mandible (Fig. 9a). In protrusive, the overbite in such a malocclusion will throw the entire stress of the masticating muscular forces upon the incisors, without adequate support posteriorly. There are many cases in which the incisors cannot tolerate this strain, and in adult life, it is usually found that there is a severe breakdown of the supporting tissues. After repositioning all of the teeth and correcting the mesio-distal relationship of the buccal segments, a Sved type of bite plate may be inserted (Fig. 9c). This appliance serves as a retaining device for the corrected maxillary anteriors, and helps to open the bite at the same time by depressing the lower anteriors and allowing the posterior teeth to continue their eruptive tendencies. After using this appliance for some months the conventional type of Hawley bite plate may be inserted for retention purposes (Fig. 9d).

The Sved bite plate differs from the usual Hawley bite plate in several respects. The wire frame is eliminated and the appliance becomes tooth bearing as well as tissue bearing. This minimizes any irritation to the palatal tissues and helps to maintain more efficiently the corrections achieved on rotated anterior teeth. For esthetic reasons, this bite plate is always made of clear acrylic, and it is worn by the patient day and night and even during mealtimes in order to bring

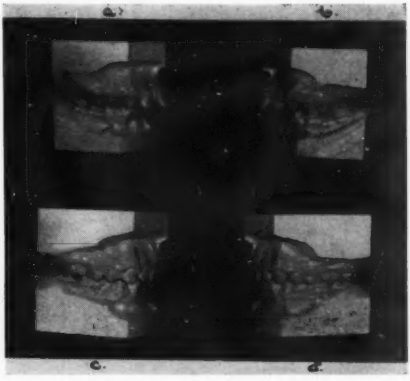


Fig. 10

a. View of right side of severe Class II malocclusion. Note mutilation indicated by missing maxillary first molar.

b. View of left side. Note excessive horizontal overbite, and loss of vertical dimension.

c. View of right side after orthodontic treatment. Note that maxillary second molar was allowed to assume position of extracted first molar, so as to obviate need for artificial replacement.

d. View of left side of casts after treatment.

about the changes in the occlusal level most efficiently.

In the second type of deep overbite we no longer see the inward slope of the maxillary incisors; instead we see a deep bite with flaring maxillary anteriors, the incisal edges of the lower incisors striking into the palatal tissue (Fig. 10a, b.). This type of malocclusion often traumatizes the palatal tissue, resulting in a definite breakdown of the alveolar processes behind the upper anterior teeth. In some instances these cases may be further complicated by the loss of the maxillary first molars with forward migration of all the maxillary teeth. This type of bite is amenable to correction and with the increase in the vertical dimension, all the upper teeth will move distally into their proper relation with the lower dentition. At times, in cases of premature loss of teeth some molars may move forward to take the place of the previously extracted teeth and orthodontically we may have to effect a compromise (Fig. 10c). In the interest of good dentistry, open contacts which sometimes remain, must be built up by the family dentist.

If these severe malocclusions continue untreated through adult life, they present a serious periodontal and prosthetic problem when the occlusion begins to break down. The patients often appear with an exaggerated curve of Spee, together with a locking of the lower incisors in the palatal tissues behind the maxillary anteriors. In addition there is a forced retrusion of the mandible distal to its normal centric position. In other words, the physiological forward movements of the mandible is blocked by the deep overbite, and if missing teeth must be replaced at some future time, the dentist really has a problem.

It might be of interest to briefly discuss the very common closed bite, those that are caused by mutilations such as the loss of permanent lower first molars (Fig. 11a). There is an abundance of evidence of drifting of teeth with a collapse of the dental arches following the loss of

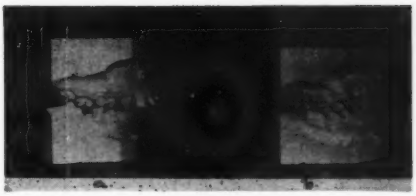


Fig. 11

a. Severe malocclusion with loss in vertical height accentuated by mutilations due to loss of mandibular right and left first molars.

b. Same view of casts after treatment. Note space closure to avoid artificial replacement. Maxillary right and left first premolars were extracted to equalize number of dental units and assure permanency of esthetic and functional result.

these molars. The loss of such teeth alters the forces of occlusion and therefore can and does alter the type of bite. The earlier in life that the extraction occurs, the greater the destructive changes that will take place in the dental arches and the periodontal tissues. In addition to the obvious tilting of the lower second molars and the extrusion of the upper first molars, there is an increase in the horizontal overjet as well as the vertical overbite. These lower first molars, when extracted, should be immediately replaced in order to prevent the unfavorable sequelae which follow in almost every instance, or if the patient is too young for a permanent replacement, a space maintainer should be utilized temporarily.

A force applied without injury to 32 teeth in normal occlusion, may become a pathologic force when applied to a lesser number of teeth. We have all seen that loss of teeth often results in impaired occlusal balance, and when this is added to reduced alveolar support, the effects of occlusal trauma become more severe. These effects of occlusal trauma must be treated by building up tissue resistance, reducing the stresses by judicious balancing or grinding, or by orthodontic treatment, and in many cases by all these measures combined. Since the

loss of tissue resistance is usually the primary factor, the first step should be the establishment of the health of the periodontal tissues by standard methods of treatment. Where systemic factors are involved, nutritional and hormonal imbalances are generally considered by the periodontist. In the vicious cycle of periodontal disease, inflammation causes swelling of the periodontal membrane and results in extrusion of the teeth and still more occlusal trauma, which in turn, causes more inflammation.

The orthodontist and periodontist gives much effort to the preservation and correction of teeth in mouths involved with periodontal disease. The general practitioner should make every effort to at least maintain this state of health with which he is being presented. Time and again dentitions properly treated by the general practitioner, after having been placed in order by the orthodontist and the periodontist have shown a decided improvement from the periodontal point of view. The treatment by the general practitioner to which we are referring is called splinting, and it has become an accepted operation in every day dental practice.

Splinting, in dentistry, is comparable to the repair of bone fractures which medical and dental surgeons are daily called upon to perform. The periodontist must remove all infection and irritations which may lead to infections. Then the orthodontist "sets the fracture" by manipulating the teeth in a manner so as to obtain as perfect an occlusion as is possible. The dentist now stabilizes the case by means of one type of splint or another. Just as in bone fractures, where there are times when the infection may be treated after the fracture has been set, so too, in dentistry there are occasions where it is more expedient to do the splinting first and then refer the patient for periodontal treatment (Fig. 5).

There are no tricks or special aptitudes for the construction of a splint. Each and every one of us performs integral parts of these operations all day long. There only remains the realization that a very definite service can and should be rendered to the patient in an effort to maintain the patient's own natural dentition as long as is humanly possible without jeopardy to his health.

The theoretical necessity for splinting has been established, and now we enter the mechanical phase of this operation. Any following reference to a splint will refer to the permanently cemented type only. If a removable splint is the subject at any time it will be referred to as a "temporary splint," which indeed it is. Splints may be constructed from M-O-D inlays, ¾ crowns, full cast crowns, swaged or more familiarly called shell crowns, pin ledges, and plain two surface inlays where just two teeth are to be tied in, or where they form the end portions of a longer splint. Frequently combinations of these various restorations are employed. There is no doubt that full coverage is the most desirable type of restoration from a mechanical and a caries prevention point of view. However, there are many considerations which should determine the choice.

For anterior teeth, especially in the upper jaw where esthetics is constantly a problem, the choice is limited to either veneer crowns or to gold thimbles over which are placed porcelain jacket crowns. There has been a rebirth of the porcelain jacket crown which holds promise of overcoming the shortcomings of both veneer crown and the unit-built jacket crown. A storm of protest may be heard over the statement that there isn't a veneer crown made by anyone which can be considered satisfactory in this area, where esthetics is of almost prime importance. Acrylic, when backed by gold, does not reflect light as does baked porcelain under the same condition (Fig. 12). It has been found that with acrylic veneers a slight apron over the shoulder onto the root is desirable in discouraging caries. Thus when some gingival recession takes place, as is often inevitable,

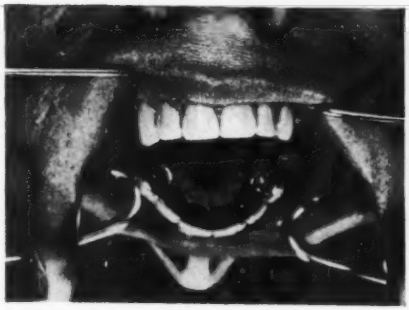


Fig. 12

Photograph showing both labial and lingual views of splint consisting of veneer crowns on all upper anterior teeth.

Fig. 13

Upper splint involving centrals and right lateral and right cuspid constructed by means of the unit built porcelain jacket crowns. Anteriorly, this is the most pleasing type of restoration.

a not too pretty picture is presented, showing a poor esthetic acrylic to start with, then a gold band, and finally the root surface itself. Some overcome this gold band effect by carrying the acrylic over the shoulder and covering the entire casting. This makes for a bulky portion which exerts pressure on the marginal gingivae with subsequent hypertrophy and blueness indicative of stasis in the capillaries in the involved area. Thus the method of choice in this type of restoration is the thimble and porcelain jacket crown unit (Fig. 13). It is well to remember that this type of restoration has some shortcomings. First, it is breakable, a factor that can be held to a minimum by proper adjustment of the occlusion. Second, more grinding is required, but as these operations are performed for the most part on mature individuals, pulp involvement is practically non-existant. This does not detract from the fact that the patient will be subjected to more discomfort due to the additional grinding. Another seeming disadvantage would be the fact that the joints have to be soldered close to the gingivae but investigators agree that there is no gingival irritation if a modicum of care has been exercised. Complete acrylic jackets over gold copings are ruled out for the reason that they are soft and are worn down to the point where they are in infra-occlusion. Where a gold stop is placed on either the lingual or occlusal surface to overcome this condition, wearing down of the acrylic still takes place leaving a projecting gold shelf with which the tongue is constantly at odds.

As the splint progresses posteriorly we can make excellent use of the veneer crown, bearing in mind that esthetics have now become a secondary consideration in this locality (Fig. 14). In many

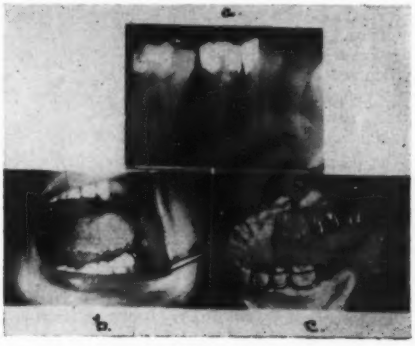


Fig. 14

a. Periodontally involved lower left bicuspids and molars.

b. View of splint in place on lower left side.

c. Photograph of both temporary and permanent splints. The latter consists of a full cast crown and two veneer crowns.

cases the first molar, and in all cases the second and third molars can be easily repaired with the construction of a simple full cast crown. The fact must be stressed that there has been a drifting away from the use of the ¾ crown, a restoration, which if properly constructed, subjects the patient to the least amount of grinding, can be easily produced by the dentist without prohibitive laboratory costs, and retains for the patient the natural facial contours of his teeth, something which is frequently reproduced rather haphazardly (Fig. 15, 16).

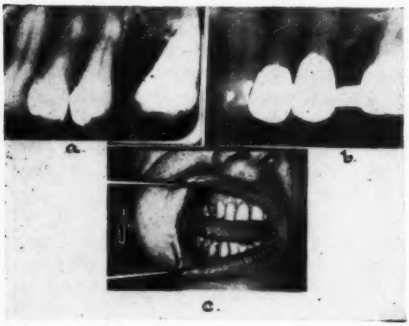


Fig. 15

a. Case with periodontally involved bicuspids and molar. The second molar has drifted into first molar position somewhat. Roentgenogram was taken in 1943.

b. Case stabilized by means of ¾ crowns only and a small gold shelf between the molar and second bicuspid in lieu of a pontic.

c. Photograph of case on upper right side as it appears today. Note also lower splint constructed of ¾ crowns running from cuspid back on the lower right side.

The ordinary M-O-D inlay is contraindicated for splinting because of the exposure of too much tooth structure to the occluding tooth making failure of the splint an inevitability. However, should this be constructed as an M-O-D onlay it is fairly satisfactory although twice as much caries susceptible margin is exposed than in a ¾ crown, and the occlusal width has remained unchanged, whereas good procedure would provide for the reduction of this surface to about two-thirds of its original dimension bucco-lingually. Two surface inlays can be disposed of with the same reasoning applicable to the M-O-D inlay plus the fact that the untouched proximal surfaces will invariably become carious. Pin ledges are contraindicated as far as splinting is concerned because they do not extend into a relatively immune area interproximally, and so are doomed to failure in splinting.

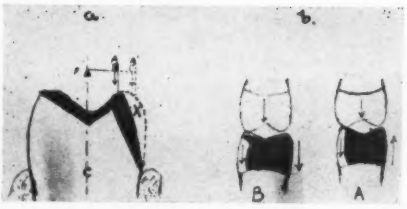


Fig. 16

Two important considerations in the construction of a successful ¾ crown. f

a. C—central axis of tooth; F—fulcrum; A, B—masticating forces exerting a tipping action on the tooth in its socket; X—tooth structure not to be replaced by gold casting. In this schematic drawing it can readily be seen that if the original occlusal surface has been reduced bucco-lingually the torque action brought to bear on it during mastication is similarly reduced.

b. A—danger of the abutment being levered away from the bridge or splint due to the bite of the opposing cusp. B—avoidance of this danger by correct gold coverage of the cusp.

In some cases where the prognosis is doubtful, the teeth are first stabilized with a removable or temporary splint which has been cast out of gold or one of the chrome alloys before undertaking the construction of a fixed splint (Fig. 17). Another temporary aid may be found in the use of both stainless steel ligatures, silk ligatures and even brass wire.

In the construction of the fixed splint one should make every effort to tie in at least one healthy tooth on either side of the affected area. Splinting as an aid to treatment should not be discarded should this possibility not be present,

since some selected cases may respond where these favorable conditions do not prevail.

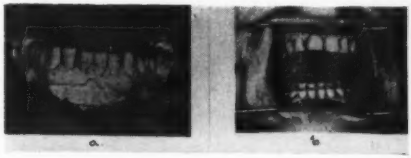


Fig. 17

a. Cast of lower teeth before treatment. Note large space between right central and lateral.

b. Space reduced by means of .010 stainless steel ligatures and temporarily stabilized for the present with a cast continuous clasp made of one of the chrome alloy metals.

In the correction of existing or incipient oral and facial deformities, in the prevention of dental disease and psychological maladjustments brought on by these conditions, the dentist can contribute a great deal to make this a better world for thousands of such handicapped individuals (Fig. 18).

Fig. 18

a. Front view of casts of 39 year old female. Note malocclusion and broken down mandibular incisors.

b. Intraoral view of same case. Note poor replacement of maxillary right lateral incisor due to limitations placed upon the dentist by the malposed central incisors.

c. Front view of casts seven months after beginning of orthodontic treatment. Note that diseased mandibular incisors have been replaced with a cuspid to cuspid fixed bridge.

d. Intraoral view after treatment.

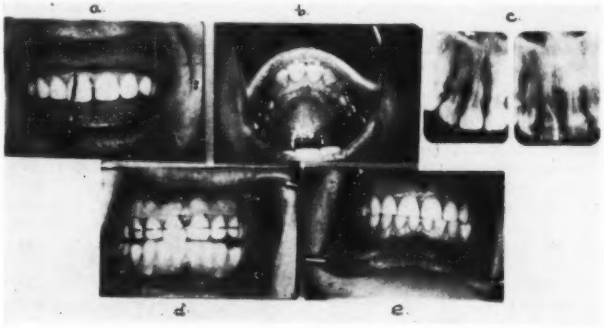


Fig. 19

a. Tooth movement caused by bobby-pin habit.
b. Note malalignment of upper central incisors.
c. Note pocket formation (as shown by gutta percha point) on palatal aspect.
d. Teeth realigned orthodontically and wired in place.
e. Occlusion equilibrated.

Regulation of tooth position, orthodontically, in the alveolar bony base helps reduce trauma. This is aided by occlusal equilibration and a building up of tissue resistance to reduce inflammatory processes. Maintainance of the health of the periodontal structures are of paramount importance if the case is to remain successfully cured.

There are many instances in which intelligent planning and cooperative effort in the various fields of dentistry can make it possible to prolong the life expectancy of human dentition (Fig. 19). Periodontal treatment, orthodontics, prosthodontics, splinting, and proper operative procedures can set up conditions in many cases that will arrest or prevent the process of bone loss and keep patients happy from the standpoint of masticating efficiency, esthetics and mental attitude for their entire span of life.

1749 Grand Concourse

BIBLIOGRAPHY

Burman, L. R. and Burman, H. J.: The normal mouth. N.Y.J.D. 16:304-11, Oct., 1946.

Burman, L. R.: Periodontia for the general practitioner. B.N.D.A. 8:88-93, Jan., 1950.

Burman, L. R.: Gerodontia. N.Y.J.D. 20:62-71, Feb., 1950.

Burman, L. R.: Periodontia in the general practice. Alpha Omegan. 45:125-131, Sept., 1951.

Miller, S. C.: Textbook of Periodontia. 3rd ed. Philadelphia, Blakiston Co., 1951.

International Dental Journal, a Scientific Publication

The final in a series of 20 international scientific reports which will be presented at the 11th International Dental Congress in July will be published in the June issue of the *International Dental Journal.*

Later issues of the quarterly Journal, which is sponsored by the Federation Dentaire Internationale, will contain the transactions of the Congress, including discussions of the scientific papers.

Dr. Hubert H. Stones, of Liverpool, England, director of dental education at the University of Liverpool, is editor of the Journal.

Subscription rates for the publication are $7.65 per year for members of the Federation, and $8.50 for non-members.

Back issues of the Journal are available and subscriptions may be started with any issue, beginning with September, 1950. Orders for subscriptions should be sent to British Publications Inc., 150 East 35th Street, New York 16, N. Y.

BOOK REVIEWS

Nitrous Oxide—Oxygen Anesthesia. By F. W. Clement, M.D., Philadelphia, Pa., Lea & Febiger, 1951. Third edition. 369 pp. 129 ills. $6.50.

The purpose of the present edition, as implied in the preface is to bring the subject matter in the field of anesthesia up to date. The book is divided into the following five parts:

1. General Considerations.
2. The Administration of N_2O-O_2 Anesthesia.
3. Special Techniques.
4. Summary of N_2O-O_2 Anesthesia.
5. Dental Anesthesia Analgesia.

An outstanding and life-long proponent of McKesson's methods, Clement still teaches and advocates the wide use of N_2O-O_2 in ambulatory and hospital practice.

The author points out that since the death of McKesson, 15 years ago, newer knowledge has resulted in the modification of some of the fundamentals of McKesson's original teaching and methods.

There are a few isolated discrepancies in his presentation.

For one, he outlines "The Complete Secondary Saturation Method" in full, a pattern long outmoded, as being "chiefly of historic interest." He offers in its place as "equally satisfactory"—"the less drastic methods of Partial Secondary Saturation," clinical procedures which modern practice no longer looks kindly upon. Except for a very small change in the degree of saturation and timing in execution, the specific Partial Saturation Methods he describes are equally fraught with danger.

Secondly after devoting a full chapter to the role and importance of rebreathing, the author concludes "Actually, however, if no rebreathing were employed, the patient would not develop acapnea, since there is always enough dead space in the apparatus to allow the trace of rebreathing necessary to provide the very small amount of carbon dioxide required to sustain respiration."

In the main, the author has made out a good case for nitrous oxide-oxygen anesthesia.

There is no single or simple formula for ambulatory or hospital practice in anesthesia. The book highlights the principles and concepts which are the basis for a practical knowledge of the subject. The writer clearly details the essentials for patient evaluation and safe administration. A knowledge of the basic physiologic, pharmacologic, and chemical processes that the novice, as well as the seasoned operator, must possess to fully understand anesthesia are explained at length. The role of premedicants and synergists in ambulatory and hospital practice, including common misconceptions that have the use of N_2O-O_2 are dealt with adequately. While not designed as a dental anesthesia teaching text, it is recommended as a reference book.

ANTHONY S. MECCA

Cardiac Pain. By Seymour H. Rinzler, M.D., Springfield, Ohio, Charles C. Thomas, 1951. 139 pp. 10 ills. $3.75.

Heart disease is established as one of the leading causes of mortality and morbidity and much of the morbidity takes the form of pain. An historical review of cardiac pain reveals two conceptual phases. The first described the pathology of this condition and the other, the present phase, is therapeutically oriented.

A knowledge of the neuro-anatomy is essential. Many of the pains involved are referred and the surgical technics used in their relief depend upon accurate localization. An understanding of the mechanism of cardiac pain bears directly on the differential diagnosis of pains in the chest and also on the problem of painless myocardial infarction. Clinical conditions which cause chest pain that must be differentiated from pain due to coronary disease can best be considered in terms of neurologic mechanisms and pathways.

Experience in medical treatment of cardiac pain emphasizes the pitfalls which accompany the evaluation of new drugs without adequate control. The new techniques and summarized results of the surgical treatment of cardiac pain give promise of fulfillment. Indeed, direct surgical approaches aimed at providing new sources of blood supply for the myocardium endangered or crippled by coronary artery disease warrant the prediction that resolution of this problem and its associated pain may evolve from one of these procedures. In the meantime, the clinician, faced with the problem of cardiac pain, will find that neurologic or cutaneous blockades provide relief in certain cases.

I. NEWTON KUGELMASS

MEDICAL VIEWS ON ORAL PROBLEMS

LIFE EXPECTANCY*

There has been some uncertainty about the figures for life expectancy at birth in the United States in 1900. It has been customary to use 49.2 years, based upon the deaths in 1900, 1901, and 1902 in the death registration states and the population estimate for July 1, 1901. The National Office of Vital Statistics has recently presented interpolated life expectancy values for each year, from 1900 to 1948, establishing that life expectancy at birth in 1900 was 47.3 and in 1948, 67.2. This eight-page publication, which can be obtained without charge from the National Office of Vital Statistics, Washington 25, D. C., contains a new table, showing that life expectancy at birth in 1900 was 46.3 years for males and 48.3 for females as compared with 64.7 and 70.2 in 1948, gains of 18.4 years and 21.9 years respectively between 1900 and 1948. Later releases by the National Office of Vital Statistics give 67.6 years for 1949. The figures for 1950 have not yet been released. Thus, life expectancy at birth increased 20.3 years between 1900 and 1949, although there were some decreases during the period, particularly the sharp decrease in 1918 due to the influenza epidemic. These newer figures for life expectancy offer an authoritative basis for determining the increase that has been gained in the last half century. They also offer evidence of how much has been gained for the health of the people of this nation.

* Editorial, J.A.M.A., Jan. 19, 1952.

PERSISTENT SALTY TASTE*

To the Editor: A 57 year old white man has had an annoying salty taste in his mouth for three years. The symptom started while he was having teeth removed for pyorrhea and persisted after removal of all teeth after he was fitted with full upper and lower acrylic dentures. It is so annoying that he constantly sucks on candy or chews gum. He uses no salt on his food. He is in good health except for a traumatic glaucoma, for which he has been using 25 percent pilocarpine, one drop daily in the right eye for seven years. The blood is normal except for 5 per cent eosinophils. The urine is normal. No oral lesions or systemic diseases were detected on physical examination. I should like an opinion on diagnosis and suggestions for further study.

ROBERT A. MARKS, JR., M.D., *Buffalo.*

ANSWER.—If the timing of the onset of symptoms is correct and the mouth condition is normal, several possible causes can be ruled out. The constant salty taste should have no relation to the previous use of pilocarpine or the later use of dentures. Pilocarpine produces an increase in saliva, but the dose in use is so small and infrequent that it is not probable that it could be effective on a single type of taste bud in the mouth. The salty taste aberration could not be explained on a basis of nerve change or injury at the time of extraction. Taste changes may occur between the ages of 50 and 70 as a part of senescence but are usually due to lowered sensitivity, especially if the palate is covered by a plate. Subclinical glossitis can produce taste abnormality, as described in the answer to a query in THE JOURNAL of Sept. 17, 1949 (page 237). Saliva contains taste-activating hormones, but the use of salivary depressants and stimulants to determine the effect of saliva volume on taste might disturb the glaucoma. The persistence of the salty taste suggests a psychoneurotic etiology, and a capable neuropsychiatrist could check both the nerve and psychic aspects.

* J.A.M.A., June 16, 1951.

AUREOMYCIN IN MUMPS OF ADULTS*

The course of mumps is more severe in young adults, and it also causes more frequent and more severe complications in them than it does in children. The most serious complications is orchitis, which appears in an average of about 30% of sexually mature males and which leads in from one-third to two-thirds of the cases to testicular atrophy and, in cases of bilateral involvement, even to sterility. Pancreatitis occurs in about 8% of cases. Meningitis and encephalitis are comparatively rare complications of mumps in adults, as are damage to the internal ear, oophoritis, mastitis, dacryocystitis, thyroiditis, iridocyclitis, and prostatitis. Until recently only symptomatic measures were available for the management of these complications. Schaub used aureomycin in the treatment of 17 recruits who contracted mumps in the course of an epidemic in a Swiss army camp. Seven of these were hospitalized immediately after onset, whereas the six others had had mumps for several days and already showed signs of complications such as orchitis and pancreatitis. The patients were treated with aureomycin for three to nine days. The total dose ranged up to 20 gm. In a comparison of the patients who were treated with aureomycin with an equal number of patients of similar age range treated between 1946 and 1950, it was concluded that the early administration of aureomycin in epidemic parotitis prevents the development of complications and has a favorable effect on the course of the primary disease. Already existing complications, such as orchitis and pancreatitis, are reduced in severity and subside more rapidly.

* Abstract from J.A.M.A., Dec. 15, 1951.

INFILTRATING EPITHELIOMA OF TONGUE PROBABLY DUE TO DENTAL PROSTHESIS*

Lingual epitheliomas most frequently result from the friction or irritation caused by teeth that are badly placed or have sharp edges. Injuries to the sides of the tongue soon give rise to reparative epithelial hyperplasia, which degenerates easily into squamous cell carcinoma. Electrogalvanic currents originating from metals of varying electrostatic potential used in dentistry may cause repeated burns of the buccolingual mucosa, giving rise to leukoplakia, which sooner or later degenerates into epithelioma. The authors report a case of infiltrating epithelioma of the tongue in a woman aged 70 that was apparently caused by friction of the tongue against a prosthetic palate she had worn since she was 14. They state that such cases may increase as a result of ill-considered extraction of the teeth, with subsequent use of prostheses, in an effort to eliminate foci of infection.

* Abstract from J.A.M.A., Dec. 15, 1951.

SWOLLEN SUBMAXILLARY GLANDS*

To the Editor: I am puzzled about the sudden and simultaneous enlargement of both submaxillary glands in a man who had mumps in childhood. The swelling was almost the size of a hen's egg and tender to palpation. After the use of penicillin the swelling almost disappeared in two days. He had taken cold two days before the onset of swelling and was heard to hack constantly. His antrums were tender; there was no dental infection. 1. How does one differentiate between the submaxillary nodes involved in antritis and the submaxillary glands involved in mumps? 2. What are the etiologic possibilities in this case?

M.D., Oregon.

ANSWER.—1. A high white blood cell count, mostly polymorphonuclear cells, is not present in mumps. If it were known that the patient had not had mumps previously, a skin test might be of value, after the swelling subsided, for determining susceptibility or immunity.

2. In the case cited a bacterial infection seems to have been responsible for the swelling. The rapid subsidence of the glands with penicillin treatment strongly suggests an acute inflammatory condition. If the history of mumps in childhood is reliable, that would be almost sufficient to exclude mumps. Second attacks of mumps are unusual.

* J.A.M.A., Jan. 26, 1952.

SYMPTOMS FROM TEETHING*

To the Editor: During the eruption of the first teeth in a child, every imaginable symptom that the infant may show is widely blamed on "teething." The dentists of my acquaintance can produce no good evidence of any relationship between these manifold symptoms and normal dentition or any valid reasons why there should be such varied symptoms. 1. Is normal dentition known to produce symptoms such as cough, fever, and diarrhea? 2. Are there pathologic reasons for such an interconnection? 3. Is there definite evidence of a scientific nature for this theory, or is it merely time-sanctioned "empiric" belief?

M.D., Pennsylvania.

This inquiry was referred to two authorities, whose respective replies follow.—ED.

ANSWER.—The eruption of the primary teeth into the oral cavity is a physiologic process, and the eruptive process has often been blamed for a number of disturbances that happen to occur at the same time. There is no conclusive evidence of their interconnection. In fact, when both eruption and fever are concomitant, it is possible that the fever stimulated the eruption. A short discussion of this problem is given on page 773 in Nelson's "Mitchell-Nelson Textbook of Pediatrics" (Ed. 2, Philadelphia, W. B. Saunders Company, 1950).

ANSWER.—It is generally agreed that normal dentition does not produce such symptoms as 1. Cough, fever, and diarrhea. 2. There is no known pathologic reason for such interconnection. 3. Blaming the rash, cough, diarrhea, and fever on teething probably is a time-sanctioned empiric belief.

* J.A.M.A., Jan. 12, 1952.

NEURECTOMY IN TRIGEMINAL NEURALGIA*

Zaclis describes the technique he used for peripheral neurectomy in 34 patients with trigeminal neuralgia, including 3 patients whom alcohol injections of the gasserian ganglion had not benefited. In one of the patients a retrogasserian neurotomy and a bilateral prefontal leukotomy also failed. Neurectomy of the infraorbital branches was performed on 28 patients, and in eight of them neurectomy of the branches of the mental nerves on the same side was also carried out. Three patients had only neurectomy of the branches of the mental nerve, two had only resection of the peripheral branches of the ophthalmic nerve, and one had only bilateral resection of the intraorbital branches. The operation was followed

by immediate and complete relief of pain in all cases. In the post operative period all the patients experienced moderate paresthesia in the neurectomized areas, but the sensation diminished progressively without special treatment. One patient had transient paralysis of the oculomotor nerve. Facial paralysis and serious complications did not occur. Six patients did not report after the postoperative period. Follow-up observations of 28 patients were made for two or three years. Relief from pain had been maintained two or three years after the operation in 23 patients. Pain reappeared in five patients one or two years after apparent cure had been obtained by operation. In all five cases peripheral neurectomy was repeated with success. The author concludes that peripheral trigeminal neurectomy is a simple, harmless, and useful operation for trigeminal neuralgia. It can be performed without hospitalization. Recurrence of pain is rare and can be controlled by repeated peripheral trigeminal neurectomy. The first and second operations do not contraindicate another operation if it is necessary.

* Abstract from J.A.M.A., Jan. 19, 1952.

PAROTID TUMORS AND THE FACIAL NERVE*

Willis is quoted as saying that 90% of all salivary tumors are pleomorphic adenomas, and that, while most of these tumors grow slowly and appear to be well circumscribed, they are not benign. He believes that the recurrence rate after inadequate operation may be as high as 62%, and that the principal etiological factor is the conservative type of operation used because of fear of damage to the facial nerve. Shucksmith and associates have not found Bailey's analogy of the facial nerve as the filling in a parotid sandwich of any value in removing parotid tumors, but their experience with facial nerve branches and filaments makes them accept McKenzie's analogy of the parotid growing like a creeper, weaving itself into the meshes of a trellis-work fence (the facial nerve). It seemed to them that the facial nerve could be preserved with wide resection of a superficial parotid tumor by exposing the main trunk of the facial nerve immediately above the stylomastoid foramen and then working forward to the main division and filaments as need be. This method is described briefly.

* Abstract from J.A.M.A., Jan. 19, 1952.

Reservation Form for Annual Meeting in Montreal

DR. WM. M. GREENHUT
124 East 84 Street
New York 28, N. Y.

Dear Dr. Greenhut,

Enclosed is my check for.....dollars for registration fees for myself and.....

Please reserve.....room(s) beginning May.....1952.

Dr. .....

Address .....

ABSTRACTS

Correlation Between Gastro-Intestinal Disorders and Psychosomatic Pathology Manifested in the Mouth. By Leon Lefer, Annecy, Gardet & Garin, 1951.

This is a study of the modification of the gagging reflex and of the oral symptoms accompanying gastrointestinal conditions predicated on deep emotional disorders.

Psychic troubles act on the cells and produce tissue lesions. These can be the only etiologic factors in the disease or can be combined with other irritating influences. However, some claim that psychogenic factors cannot produce gastric ulcers unless the mucous membrane is already predisposed to disease.

Various influences experienced in youth can create a predisposition to gastrointestinal disorders whose symptoms will appear in the most troubled period of life. The importance of these emotions is objectively proven by the fact overactive people are predisposed to gastric ulcers; and that symptoms will subside if the patient rests and will reappear when the patient resumes his activities.

Some laboratory experiments increase our knowledge concerning psychic influences on gastrointestinal disorders. For example, an intraventricular injection of pilocarpines will produce peptic ulcers. Electric stimulation of certain cerebral centers will increase peristalsis, small ulcers and auto-digestion of the gastric mucosa. Section of the pneumagastric nerve will arrest all symptoms.

Studies have also been made of patients presenting fistula of the colon. A correlation has thus been made between the state of mind and the irritation of the mucosa with the appearance of hemorrhage and petechiae. Feelings of insecurity, hostility or aggression produce hyperemia, hypermotility, and hypersecretion. Knowing that the continuous secretion of gastric juice is more harmful than hyperacidity, one can fully understand the importance of mental states and emotional disorders related to gastric disturbances.

Fear, aggressive tendencies, feelings of guilt and repressed urges create chronic emotional tensions which alter vegetative functions. Statistics show that many patients with gastrointestinal disorders are emotionally immature. Aggressive business men are said to be predisposed while stoic men like Chinese coolies are immune to gastric ulcers. Those patients with predisposed personality traits will likely develop symptoms when they are placed in difficult situations.

The causes of internal conflicts are many; the frustration from the need for affection and care, the conflict that may arise between the infantile desire of dependence and the desire of independence of the adult. It might also be said that in early life and association is made between the act of being fed and the need for love. Later the desire of love might induce a gastric secretion in an empty stomach which according to the "sham feeding experiment" will induce ulcers. Colitis also has a psychogenic background. Early in life the act of elimination is associated with emotions of pleasure, possession, and tendencies towards keeping and giving, because of the attention the parents give to this act of the child. This explains why an emotion will induce parasympathetic activity and increased function of the colon. Patients with colitis try to compensate for their desire of dependence by hyperactivity and a need to give. But they substitute diarrhea for real acts of giving and the sickness that ensues brings them the care that they want.

Colitis is much more prevalent in America than in Switzerland. This prevalence might be related to the feeling of incapacity present in the American male. This feeling is due to the fact that the American female is always asking in the sexual and financial sphere. The Swiss male is exempt from that feeling because his wife shares with him the responsibilities instead of always asking more and more from him.

The oral symptoms of patients with gastrointestinal disorders are extremely interesting. The percentage of inefficient masticatory apparatus (including both natural teeth and restorations of all kinds), is slightly higher in the sick patients than in the control group. The lack of efficient mastication might induce mechanical irritation on the gastric mucosa and act as a precipitating factor in the presence of deeper trouble. However the great percentage of inefficient mastication found in the control group emphasizes the importance of non-mechanical factors.

Twice as much periodontal disease was found in gastrointestinal patients as in the control group. This condition not only induces inadequate mastication as stated above but also points towards the possibility of focal infection and allergic reactions to toxins.

An equal amount of inflammation due to poor oral hygiene is found in both groups. In the presence of such a condition one must think not only of the possibility of focal infection, but also of mental preoccupation and of a complex of revolt towards authority which in this case is represented by the rules of mouth hygiene.

The QQ ratio or the ratio between the quality and the quantity of brushing is also interesting. A very high percentage of gastrointestinal patients have an uneven QQ ratio which is a sign of emotional disorders as will be explained later.

The gagging reflex is a nervous reflex but

it can be modified according to the relations of the child with his surroundings. These modifications, as associated with brushing habits, can be used as diagnostic signs of the emotional tendencies of a patient. The diminution of the gagging reflex is a symptom of a desire of dependence and of incapacity. The modification occurs in early life; the child wanting affection and care does not resist in any way to feeding and is absolutely passive in the act of swallowing. According to this, when a patient, who gags very little, is seen to brush his teeth excessively, one might suspect that this patient is trying to overcome his feeling of incapacity by trying to develop a great deal of energy, part of which is used in excessive brushing. If that same patient would present inefficient brushing as denoted by an uneven OQ ratio, one should think that this man is trying to act according to the will of his superego but without any success because of his feeling of incapacity.

On the contrary, nervous vomiting and high gagging comes from a revolt against the superego and a repression of the patient's desire of dependence. It might be induced by aggressive tendencies or a guilt complex. In an excessive gagger, overactive brushing will take the significance of an effort to obey the superego and repress the unconscious revolt. On the contrary an uneven OQ ration will indicate that while apparently the patient obeys the superego, he is revolted and does not act effectively.

Nervous biting habits are also signs of emotional tension. They are easily diagnosed by the presence of facets on teeth as well as folds and lesions on soft tissues. Biting on soft tissues, finger nails and cuticles can be external manifestations of guilt feelings, the patient thus unconsciously trying to punish himself. Other biting habits, such as bruxism and bruxomania are external manifestations of repressed aggressive energy.

Oral deformities are slightly more prevalent in patients with gastrointestinal disturbances than in the control group and might thus be suspected of increasing an inferiority complex which in turn can produce gastric ulcer.

A trial was made to determine the variations of salivary viscosity in order to show a sympathetic or parasympathic prevalence in a given patient. However the present means of calculation have proven inadequate.

Finally, a difficult economic situation as denoted by the lack of dental restorations is thought to increase the patient's complex of incapacity or revolt, and initiate gastrointestinal disorders.

It can be concluded that oral associations of gastrointestinal disorders are inadequate masticatory apparatus, foci of infection and oral deformities. Oral symptoms of psychogenic troubles are variation in the gagging reflex, lack of oral sanitation, inefficient or overactive toothbrushing and various biting habits.

GEORGES PELLETIER

Experimental Periodontal Reattachment in Rhesus Monkeys. By Sigurd Ramfjord, L.D.S., M.S., PhD., Ann Arbor, Michigan; J. Periodont. 22:2:67-77, Apr. 1951.

The purpose of this investigation was the possibility of reattachment in inflamed epithelialized periodontal pockets in Rhesus monkeys by the same therapy which has proved to give clinical reattachment in man, and to study the nature of the reattachment if achieved.

Deep periodontal pockets were created surgically and copper bands were adapted to the teeth extending down into the depth of the pockets. These bands were left on the teeth for twenty-six to thirty-one days to allow for epithelial growth to the bottom of the pocket.

Ten days after the bands were removed, the teeth were scaled and the pockets cauterized with packs saturated in a mixture of 25% camphor and 75% phenol. The pockets were then curetted in an attempt to remove as much epithelial lining as was possible. The teeth were then scaled and polished twice a week until the monkeys were sacrificed.

Clinical reattachement was obtained in all but one of the eighteen pockets treated, measuring from one to four mm. There was complete healing in those pockets which were surgically created and left alone. It was noticed that no reattachment was obtained prior to the removal of the ephithelial lining.

Microscopic examination showed both connective tissue and epithelial reattachment to the root surface and that new connective tissue attachment was associated with cementoblastic activity. No reattachment was obtained in one case of severe gingival inflammation and greater connective tissue reattachment resulted in areas with the least amount of inflammation.

The author concludes from these findings that the removal of the epithelial lining was essential to the reattachment process and that the degree of inflammation in the area of healing determined whether the reattachment would be epithelial or connective tissue.

The inclusion of many good histologic illustrations, charts, and an excellent, comprehensive bibliography adds to the value of this study.

ABRAM I. CHASENS

Protein Deprivation and the Periodontal Structures of the Albino Rat. By Chawla, T.N., L.D.S., R.C.S., M.S., and Glickman, Irving, B.S., D.M.D., Boston, Mass. Oral Surg. Oral Med. Oral Path. 4:5 578-601, May, 1951.

An experiment was conducted to evaluate the changes in the periodontal tissues associated with protein deprivation and to compare these changes with those observed in other areas of the skeletal system.

Eighty male and female littermate albino rats, Wistar strain, were used as experimental animals. Forty rats were fed a diet containing only 2 per cent protein. The other forty animals used as control were fed diets containing 22 per cent protein. The diets were isocaloric and water was allowed ad libitum. An equal number of animals was sacrificed at regular intervals over the eight week period. At the time of sacrifice the mandible, maxilla, femur and vertebra were removed, x-rayed and sectioned for histologic study.

Gross findings showed a slight decrease in weight for the protein deficient animals and a marked fragility of the long bones. The control group exhibited a progressive gain in weight and no fragility of the long bones.

Microscopic examination of the periodontal structures revealed the following features in the protein deficient animals: osteoporosis of the alveolar bone with diminished osteoid formation; reduction of the number of cells of the periodontal membrane and their lack of differentiation to form osteoblasts and cementoblasts; degeneration of the collagenous fibers of the connective tissue. Overall disturbances of endochondral and periosteal bone formation in the femur and vertebra were the failure of the bone to increase in size, osteoporosis, reduction in thickness of cortical plate and lessened trabeculation. The epiphyseal plate showed a disturbance in proliferation and maturation of cartilage cells. The authors explain and support these findings with many valuable photomicrographs.

The inflammatory changes in the gingiva of each group appear equal.

The degenerative changes in the connective tissue of the gingiva, periodontal membrane, the retardation in the formation of new bone, the resultant osteoporosis, and the retardation in the apposition of cementum constitute specific tangible indices of the effect of a systemic disturbance such as protein deprivation upon the periodontal structures.

A. C. HILEMAN

ANNOUNCEMENTS

Two Day Seminar on Public Health and Industrial Dentistry

A two-day Seminar on "Dental Aspects of Public Health and Occupational Health" will be held under the auspices of the New York University's Postgraduate Medical School, Postgraduate Division of the Dental College, and Institute of Public Health and Industrial Dentistry, with the collaboration of the First and Second District Dental Societies of the State of New York. The Seminar will be given at the Dental College, on Thursday and Friday, April 10 and 11, 1952.

The Thursday morning and afternoon panels will deal with the "Background of Industrial Medicine and Dentistry," and will be addressed by Professor Anthony J. Lanza, Head of the Department of Industrial Medicine, Postgraduate Medical School; Dr. J. A. Salzmann, Editor of the New York Journal of Dentistry, and Attending Orthodontist, Mount Sinai Hospital; Professor Irving Salman, of the Oral Surgery Department, Dental College; Mr. Barnett Fox, Lecturer on Industrial Medicine and Workmen's Compensation, Postgraduate Medical School; and others.

The Friday morning and afternoon panels will discuss "Oral-Health Conservation in Industry," and will include among the essayists Professor William A. Harrigan, Head of the Oral Surgery Department, Dental College; Dr. E. R. Aston, Secretary, American Association of Industrial Dentists; Dr. Harry Strusser, Director, Bureau of Dentistry, City Health Department, and Lecturer, Department of Preventive Medicine, Medical College; Dr. David H. Goldstein, Clinical Professor of Industrial Medicine, Postgraduate Medical School; Professor Samuel Charles Miller, Chairman, Department of Periodontia, Dental College; Professor Alfred J. Asgis, Director, Courses in Public Health, Dental College, and Chairman of New York University Industrial Dentistry Seminar; Dr. E. Harold Sage, Assistant Director, Cancer Teaching Project, Medical College; and others.

Professor Henry E. Meleney, Chairman of the Department of Preventive Medicine, New York University College of Medicine will deliver the lecture on "Medical and Dental Cooperation in Public Health and Occupational Health," on Thursday evening. The Friday evening lecturer will be Dr. Bruce D. Forsyth, Assistant Surgeon General and Chief, Division of Dentistry, United States Public Health Service, who will address the participants in the Seminar, invited guests, and members of the District Dental Societies. His subject will be "The Dentist's Responsibility in Public Health and Occupational Health."

The Seminar will be held in the Dental College Building, 209 East 23rd Street, New York City. Tuition for both days, $25.00, for one day, $15.00. Application may be sent to the office of the Dean, New York University College of Dentistry, 209 East 23rd Street, New York 3, N. Y.

Postgraduate Training in Periodontia and Oral Medicine
New York University College of Dentistry

The Periodontia Department of New York University College of Dentistry which has been giving postgraduate courses in this subject since 1926, announces its full time course in Periodontia and Oral Medicine for one academic year, September 22nd, 1952 to May 22nd, 1953, leading to a certificate. The course is limited to four. Half-time two year courses are also given as well as a three weeks refresher course beginning June 2nd 1952. All courses are under the direct supervision of Dr. Samuel Charles Miller.

For information concerning the above or courses in other phases of dentistry write to Secretary, Postgraduate Division, New York University College of Dentistry, 209 East 23rd Street, New York 10, N. Y.

Postgraduate Course in Pulp Canal Therapy at New York University

The Department of Pulp Canal Therapy of New York University, College of Dentistry, offers a postgraduate course on June 2, 1952. This 54 hour course will present a practical method of treating pulp involved teeth, by means of lectures, demonstrations and clinical treatment of patients. Students may choose one of two schedules.

(a) Eighteen consecutive mornings, 9—12, or
(b) Nine consecutive full days, 9—12, 1—4.

For information concerning the above or courses in other phases of dentistry write to Secretary, Postgraduate Division, New York University College of Dentistry, 209 East 23rd Street, New York 10, New York.

NEW YORK UNIVERSITY COLLEGE OF DENTISTRY
SOCIETY FOR DENTAL RESEARCH
ANNUAL FORUM

on

"Centric Occlusion in Oral Rehabilitation

ESSAYISTS: Dr. Lewis Fox, Dr. Ernest Granger, Dr. Sidney Riesner, Dr. Clyde Schuyler.

CHAIRMAN: Dr. Samuel Charles Miller.

on Friday April 18, at 7:30 p. m.

at the College

209 East 23rd Street at Third Avenue

Large Auditorium Third Floor

A period of discussion will follow.

The Society for Dental Research extends an invitation to the members of the profession to attend this important dental event.

It is requested that you notify the Society of your intention to attend as seating capacity may be limited.

DISTRIBUTOR

PERIODONTAL INSTRUMENTS

and MEDICAMENTS

for

PERIODONTAL CLINICS

and

POST GRADUATE COURSES

GUTERMAN DENTAL SUPPLY CO.

515 MADISON AVE.

NEW YORK 22, N. Y.

COLLEGE BRANCH

203 EAST 23rd STREET

NEW YORK 10, N. Y.

Phone: PLaza 9-5020